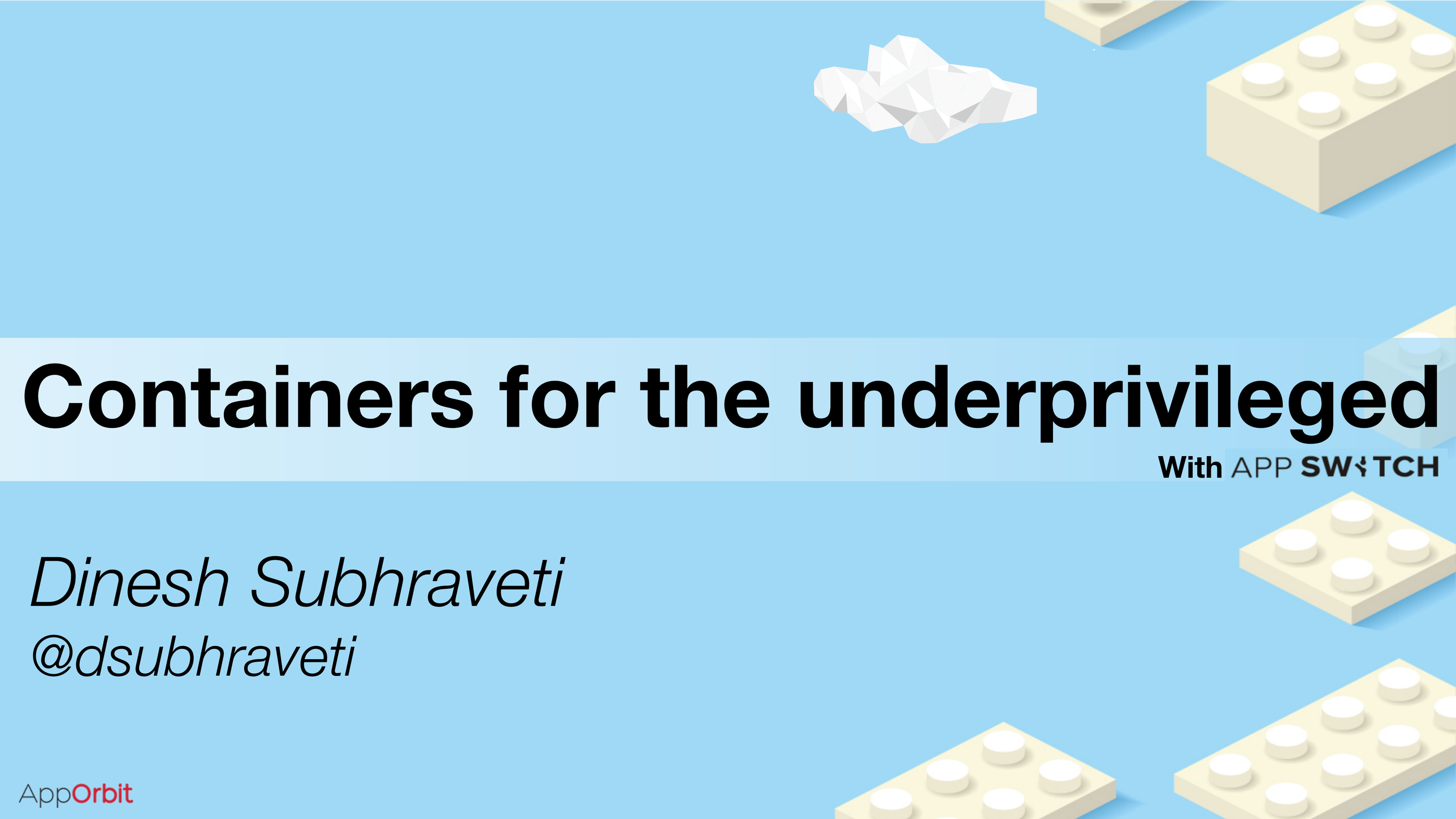

Containers for the underprivileged

With APP SWITCH

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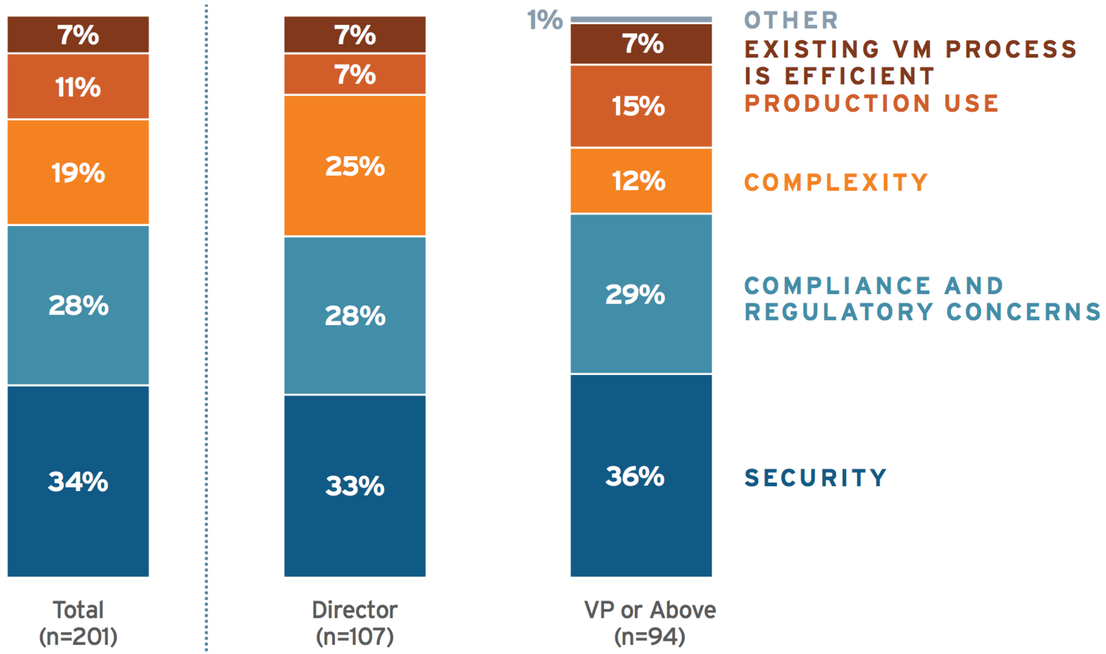
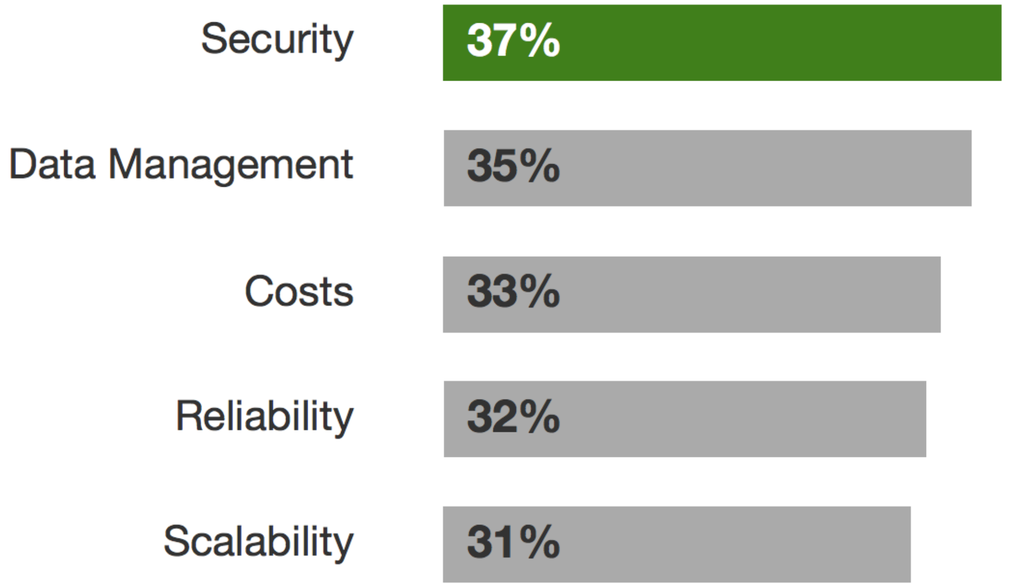
AppOrbit

Security — key barrier for container adoption



"What is the biggest hurdle to container adoption in your organization"

Source: 451 Research



"What were the biggest roadblocks/challenges that you experienced when deploying container technology?"

Source: Forrester Consulting

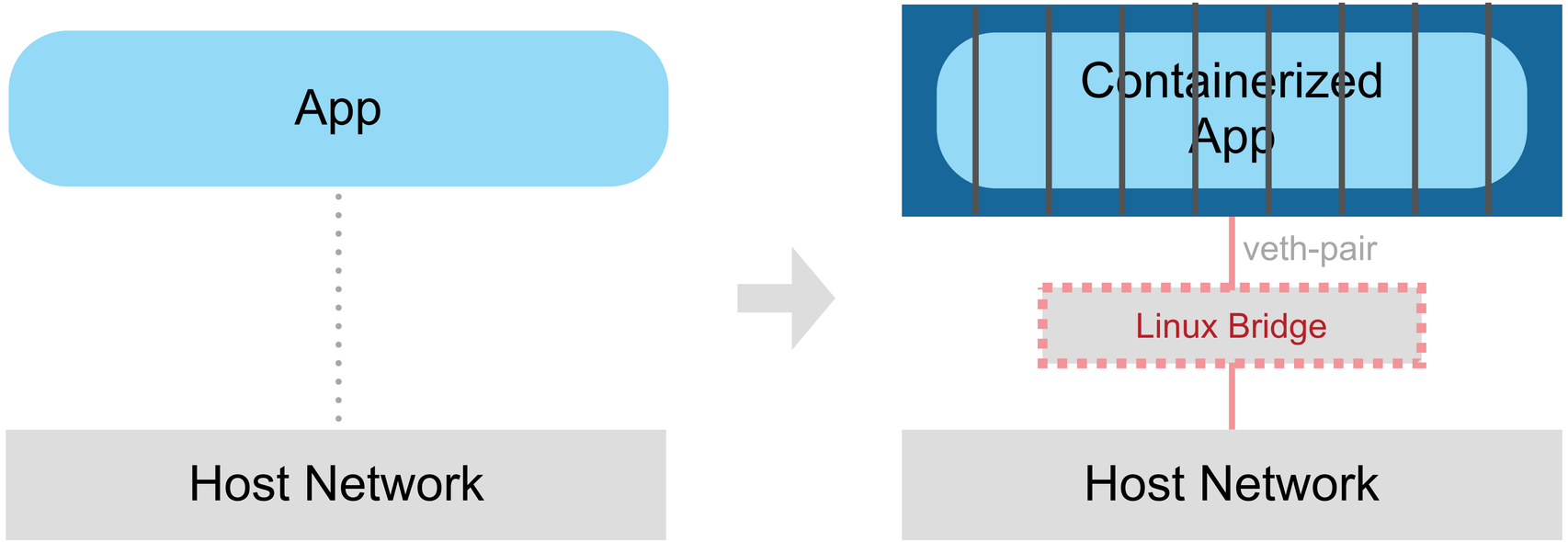
Container? No such thing!

- No container object in the kernel – It's just a transparent layer
  - Then how is it that running an app as container is so different from running it "natively"

- Let's define a couple desired properties for the container abstraction
  - **Conservation of privilege:** *I shouldn't need additional privilege to run my app as container*
  - **Conservation of resources:** *Resources I already possess shouldn't be taken away*

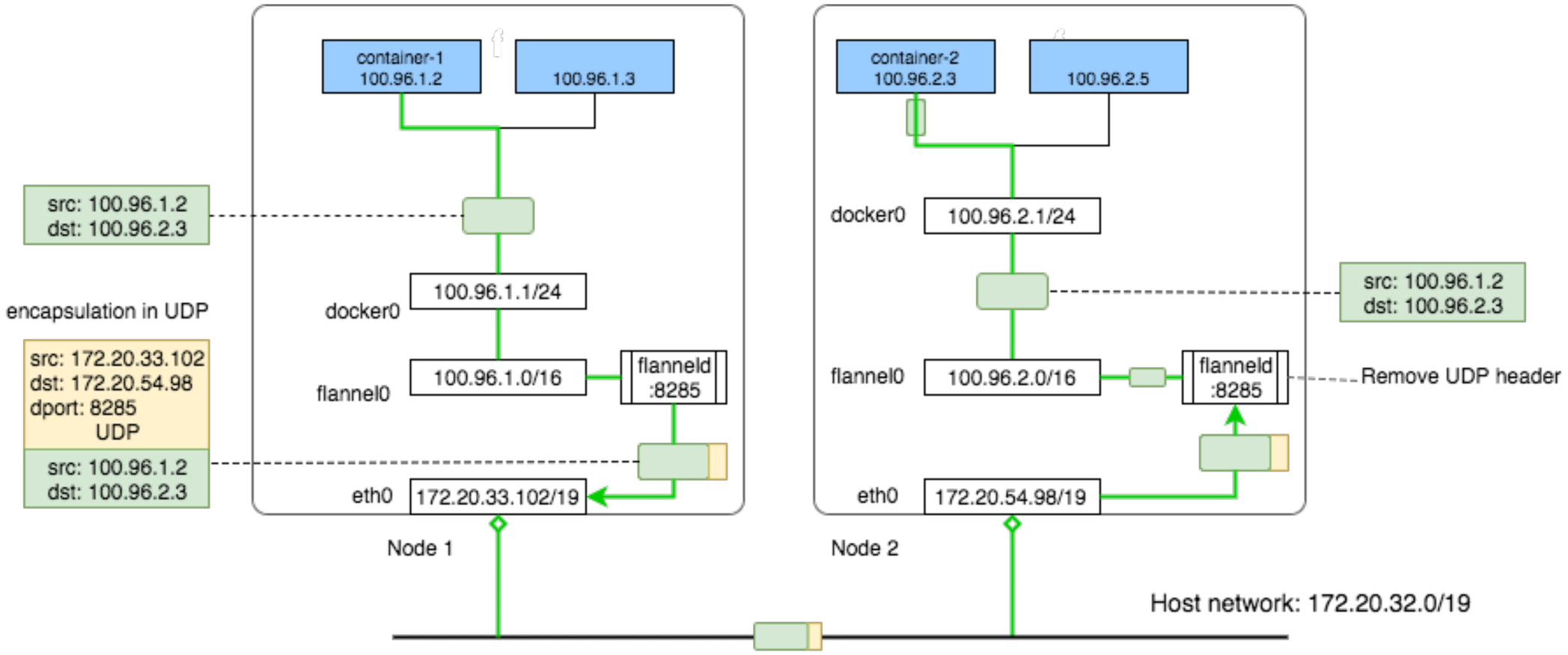
Current design of containers violates both

Privilege Drift

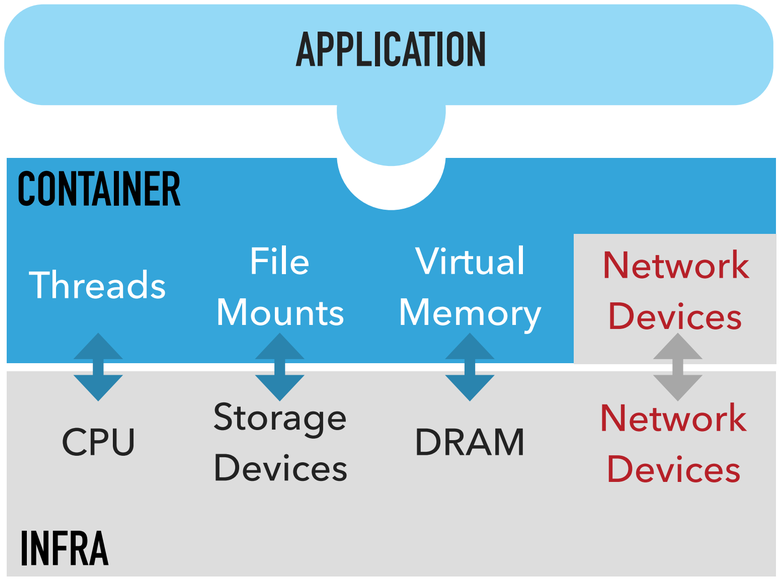


Low-level mechanisms that plumb host network into container require privilege
Ideally, privilege footprint of the container should be same as that of app

Container Networking is Broken

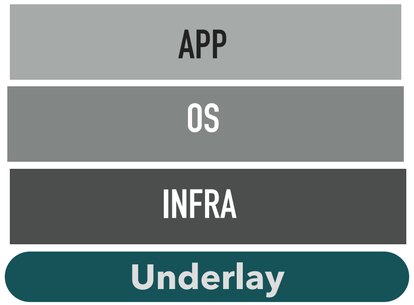


Container Networking is Broken

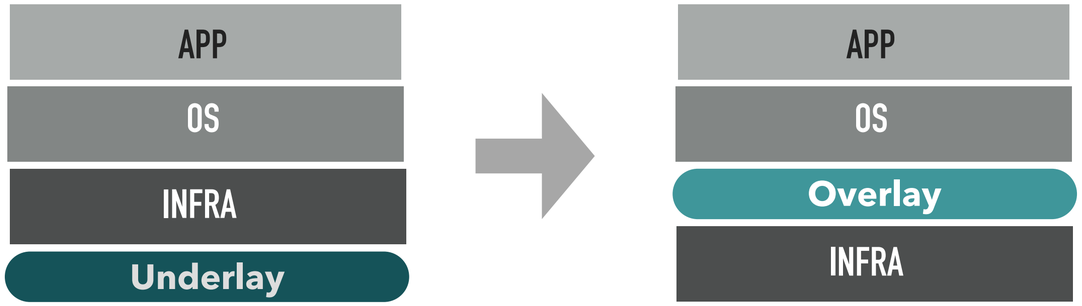


Container uses OS level abstractions for all resources except network and ends up requiring privilege

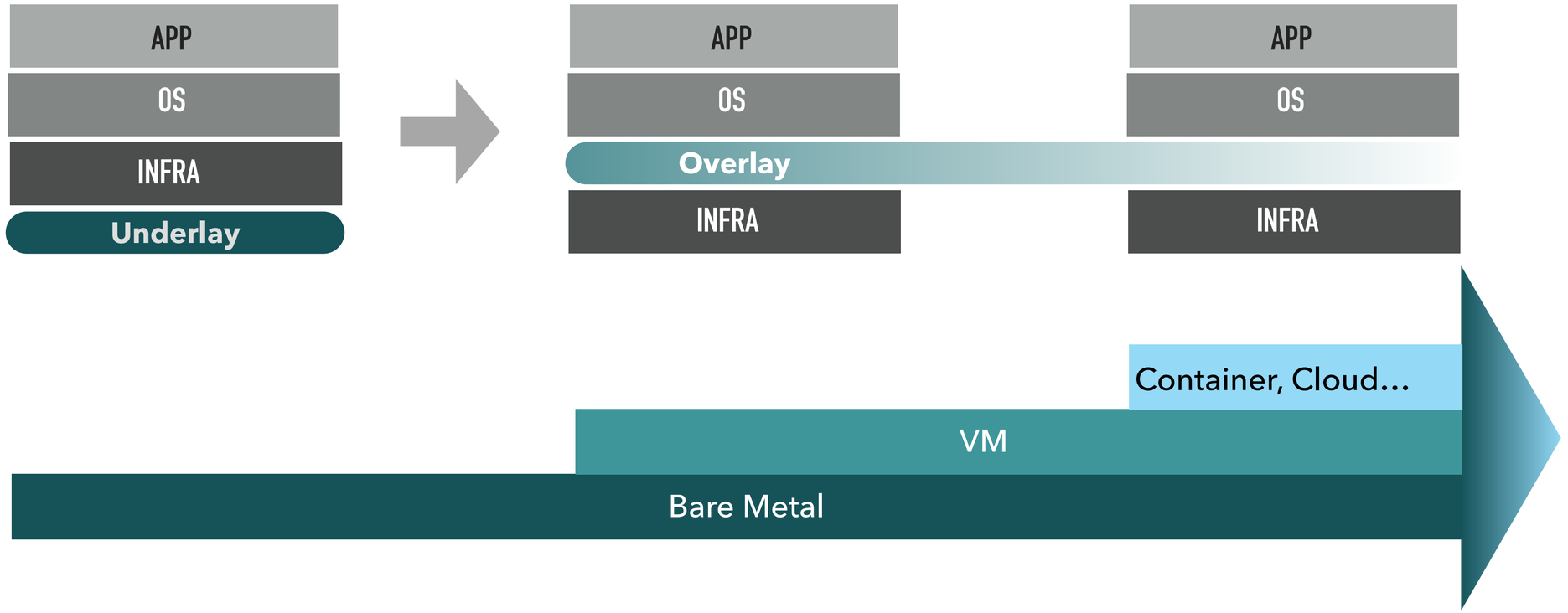
Evolution of network abstraction



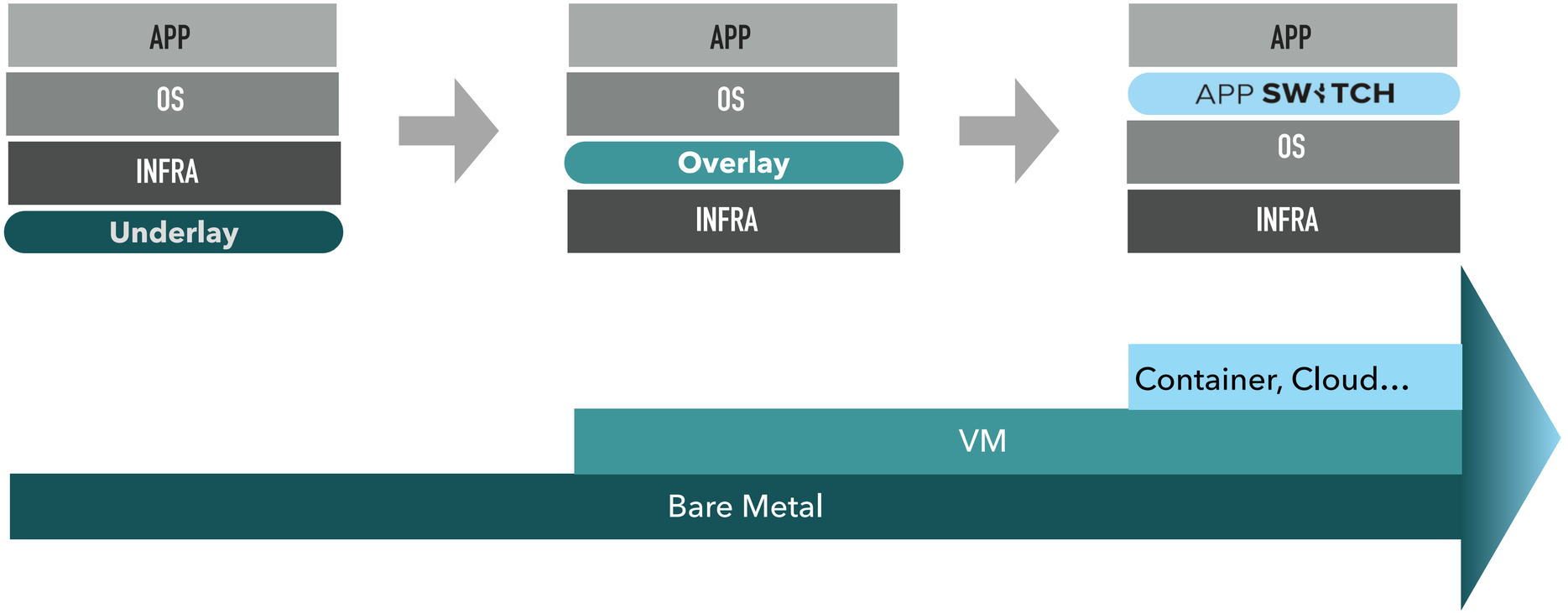
Evolution of network abstraction



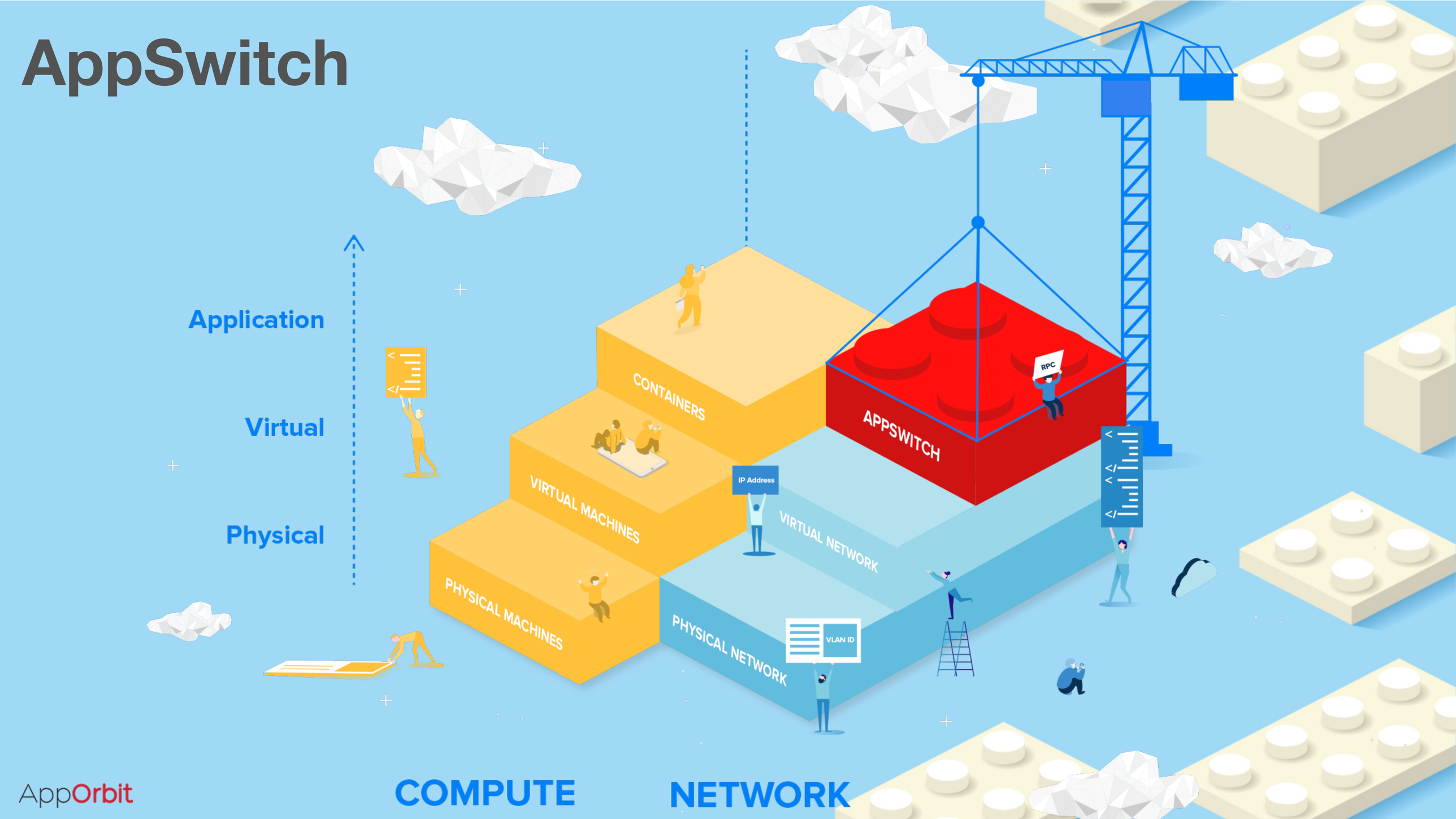
Evolution of network abstraction



Evolution of network abstraction



AppSwitch



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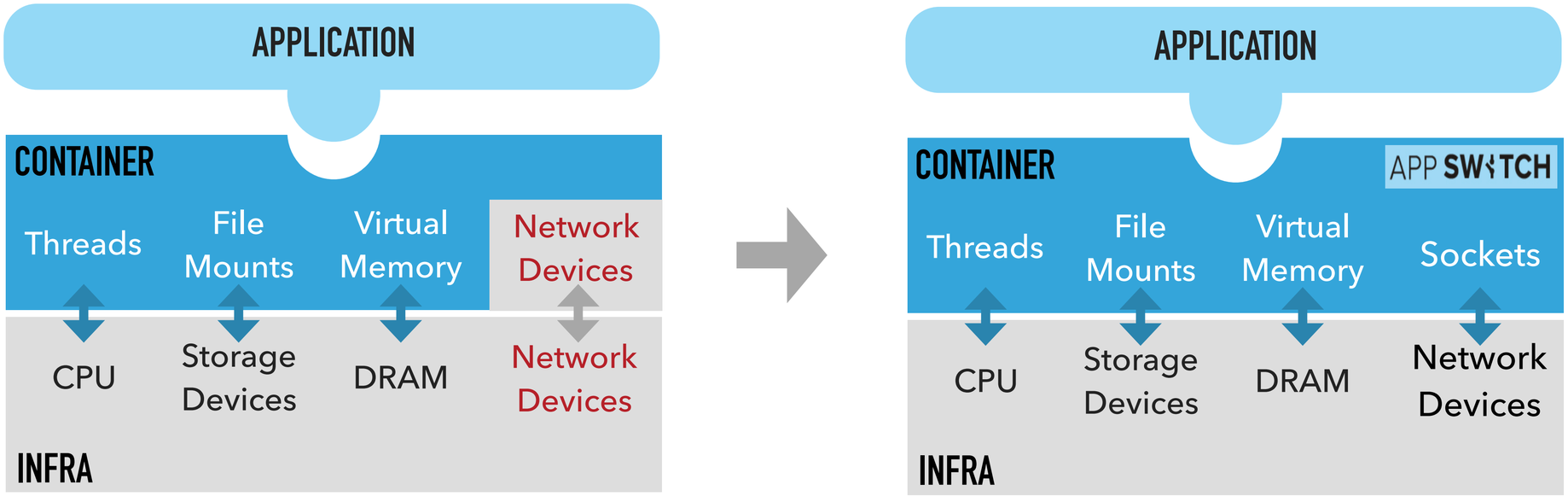
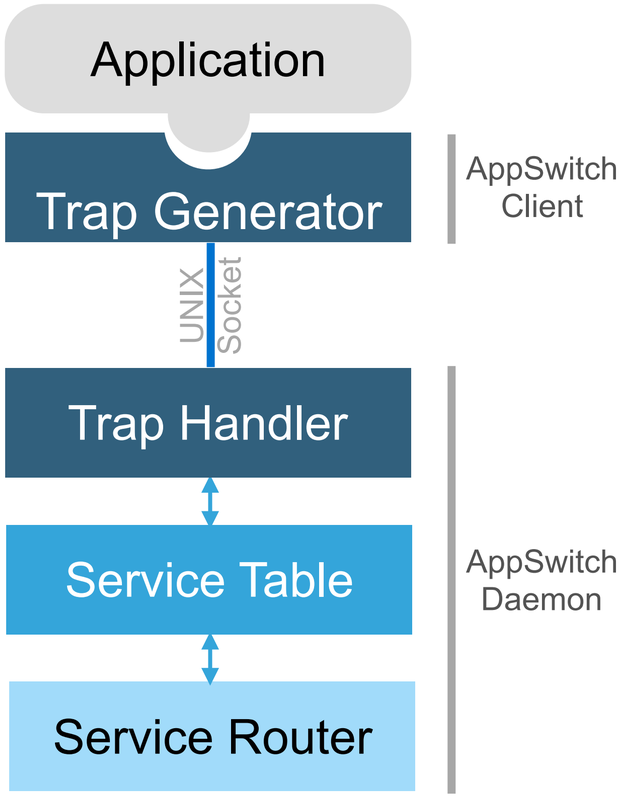
AppSwitch—
Socket / Port Namespace, Not Device Namespace



AppSwitch enables the container to work with an OS level abstraction for network and remove requirement for additional privilege

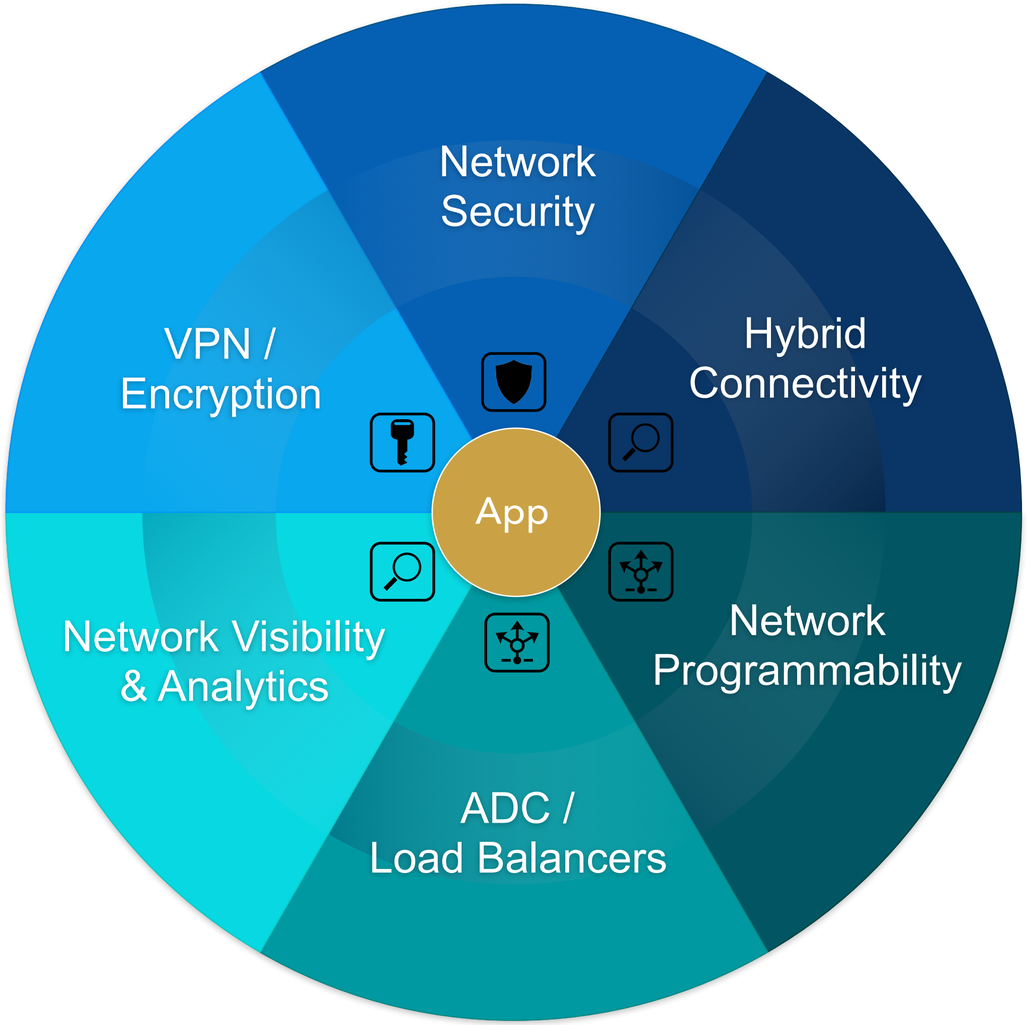
Architecture



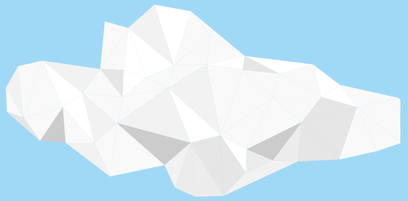
- One self-contained static binary that serves as client and daemon
- Client transparently plugs into the application and monitors its network API
- Daemon handles the API calls forwarded by the client
- Keeps service table up-to-date
- Propagates service information across cluster(s)

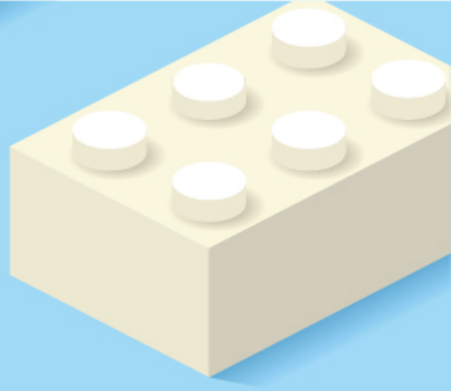
Some of the other capabilities…

- Auto-curated service registry with automatic discovery of service dependencies and their ordering
- Extremely efficient enforcement of label-based access controls without any data path processing.
- Proxy-less, client-side load balancer
- IP address portability with ability to assign arbitrary IP addresses to applications regardless of underlying network.
- Transparently redirect connection requests to alternate services without using NAT in case of application migration.
- “flat” connectivity with client IP preservation across hybrid network environments.
- Fine grain observability
- Transparent TLS insertion
- Better than native performance



Demo





Try it out

https://hub.docker.com/r/appswitch/ax/

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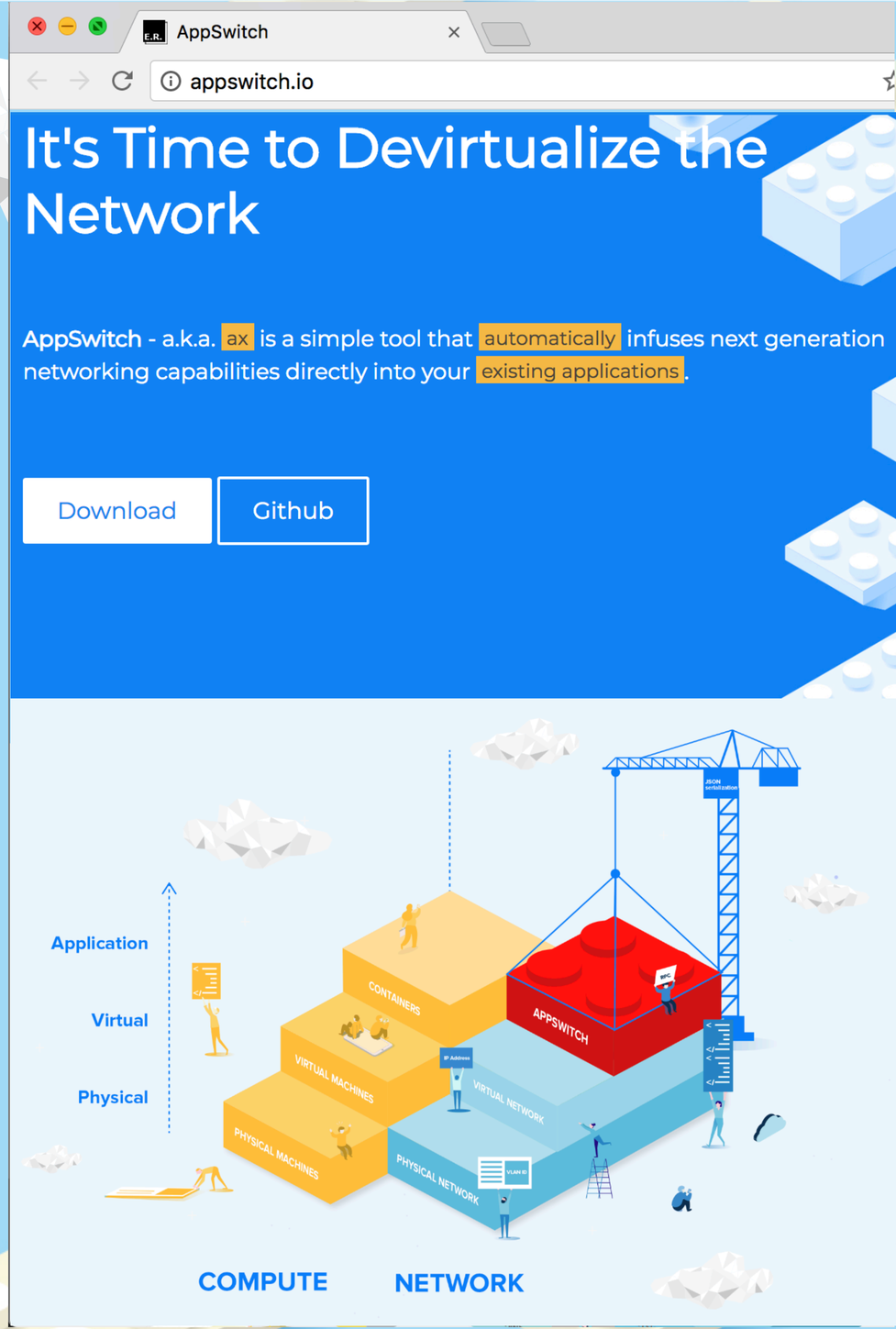

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